

# 870 DOCUMENT WRITING SYSTEM OF INTERNATIONAL BUSINESS MACHINES CORPORATION IN THE LIBRARY SECTION, LOS ANGELES CITY SCHOOLS

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The Los Angeles Unified School and Junior College Districts are constantly growing. The present area of the city of Los Angeles encompasses 458 square miles; the Los Angeles Unified School District, 710 square miles; and the Junior College District, 840 square miles. Although there is little change in area from year to year, there is considerable increase in the number of schools needed to keep pace with the rapid population growth within the area. For the purposes of this paper, discussion will be limited to services to the District high schools during two recent periods: the fiscal period at the beginning of use of the IBM 870 Document Writing System and the most recent year for which statistics are available.

	<u>1953-54</u>	<u>1960-61</u>	<u>1963-64</u>	Increase in past <u>ten years</u> (1953-54 to 1963-64)
Schools Number				
*K-14	484	578	589	105
7-12	83	114	122	39
Active enrollment March 31, 1960			March 31, 1963	
*K-14	439,821	639,281	714,368	
7-12	129,576	198,568	230,333	

\*Includes Adult Education (High School) in K-14 only.

The Catalog Department of the Los Angeles City Schools has the responsibility of providing cataloging services for the school libraries so that the librarians may have more time for their major responsibility which is working with students and teachers. Since needs of catalog users vary with grade levels, there are corresponding variations in the methods and results within the department. When the

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administrative decisions have been made as to services to be rendered, the success with which they are carried out is dependent upon the provision of adequate qualified personnel, quarters, equipment, and supplies.

The aim of the Department is to provide useful, appropriate, simple catalogs with pertinent cross references, and to provide them quickly. The catalog format must be that best suited to the students. Its arrangement should enable students to develop a skill in using the catalog which will give them confidence in using various types of public, college, and university libraries everywhere. The conventional card catalog is still currently preferable to other forms for District use. The collections are neither uniform nor static, and they are not subject to interlibrary loans.

The school librarians are free to order any titles which are needed in their individual schools and equally free to withdraw a title which is no longer useful in the collection. They are helped in their selection of books by lists of current titles which have been reviewed and evaluated by committees of librarians and teachers within the school system. These lists have been annotated, with maturity and interest levels suggested. The titles are recommended as ones which will be generally useful in the schools. The school needs vary as population varies in a system which is geographically as large as that of Los Angeles. This desirable freedom to select titles when and as they are needed does present some complications for the central office processes. Titles which appear on the recommended lists are generally ordered in quantity, and such orders are placed by machine data processing methods by the Evaluation and Order Department. The cataloging of these titles is done from review copies which have been used in the evaluation process and which occasionally vary in edition from the books actually received. The same title that appeared on the list may, and frequently does, appear as a single copy ordered for the first time for an individual school before that title appears on the list, as well as on orders placed months, or even years, later.

Books ordered by the schools fall into three categories for cataloging purposes. Titles which are new to a school require sets of catalog cards. Titles which a school orders as duplicates, of course, need no catalog cards and are not routed to the Catalog Department. The third category is the title which is not new to the school but for which cards have been requested to replace withdrawn sets. In addition to the books which are received in the Order Department and routed via the Catalog Department, there are books presented as gifts to the school libraries; and for these the schools may, and do, request sets of catalog cards. Two extensive "replacement" lists annually result in the placement of orders for titles,

some of which may be new to several schools. All of this results in considerable overlapping of titles handled at various times for cataloging purposes.

When the Catalog Department was established in 1927 there were fifty-five junior and senior high schools. The policy regarding acceptance of central cataloging and classification was permissive and although accepted quickly by most schools, had not been accepted in all until 1950. By this time there were seventy-four secondary schools. (Elementary cataloging did not become a part of the Catalog Department until 1947.)

( <u>High school only</u> )	1960-61	1963-64
Central Catalog Department staff		
Librarians	2	*3 + 1 = 4
Library clerks	1	2 + 2 = 4
Clerk typists	5	4
Duplicating machine operator	1/2 time	1/2 time
Duplicating equipment	A. B. Dick 350 Offset Duplicator	
A.B. Dick 350 Offset Duplicator	IBM 870 Document Writing System	
	Standard Register Burster	
New titles and editions cataloged	2,150	5,451
Sets of cards sent to schools	45,553	98,157
Shelf cards only		
(Arrearages of sets)	10,152	—
(For "special" schools)	458	1,496
Library staff in schools—one in each high school with clerical help ranging from 2 to 8 hours per day.		

\*Although there were again only two librarians cataloging for the high schools in 1964-65, the overall increase continued because the one librarian and two clerks assigned to the IBM 870 System were working with only high schools records.

The Catalog Department has provided sets of catalog and shelf list cards for secondary schools but no preparation of books for shelving except for ten "special" high schools.

The initial reason for working with the 870 Document Writing System of IBM was to clear the arrearages which were continuing to build up in the Catalog Department. There were several related causes for these arrearages. An increased number of books resulted from increased book budgets. Basic collections of books for the library had to be cataloged for each new school established by the District. Each of these collections received approximately two

thousand titles during each of its first two years, and frequently four new schools were opened during a year. It is easier to purchase "service" than to add and reclassify staff. The staff was not sufficient in quantity and job classification to handle the amount of work by the methods then in use. Turnover of the already small staff as civil service personnel moved into advanced positions outside the Department put extra burdens on both professional and clerical persons. The budget framework provided a handicap, for there is little "seasonable" employment. "Relief" clerks helped, but inexperience and lack of space handicapped them.

By the end of 1960-61, approximately 6,600 volumes ordered during the past two years remained for clerical handling. An additional 2,450 volumes awaiting the first sorting included an undetermined number of new titles to be cataloged. Unfilled requests received from the schools for sets of catalog cards amounted to 7,000. The total number of sets of cards to be produced was probably in the neighborhood of 10,000 for "single" orders. During 1960-61, 45,553 volumes had been sent with complete sets of cards to schools. An additional 10,152 volumes had been sent with only shelf list cards, and the corresponding 10,152 sets of catalog cards to be sent increased arrearages.

While all these arrearages were accumulating, students were reading in a District publication that one of the most important aids in the use of the library is the card catalog as an index to the book collection. "You will feel independent and at home in the library when you know how to use this aid. Through the catalog you gain information about the book collection." But the cards for books which the student knew were in the library were not in the catalog. This was not a good situation, for the student was likely to lose confidence in a library tool and perhaps in the library itself.

Arrearages are not new. As they began to mount for the secondary schools, the "multiple" copies, which resulted from combining the orders for several schools, received first priority because of the physical bulk for which there was no storage space. It was possible, generally, to prepare cards for these titles in advance of the receipt of the books so that the complete sets of cards could be sent with the books. "Singles" (titles ordered by schools individually) took second place and remained on the shelves until the "multiples" were cleared. In order to clear the "singles" and because of the manual typing involved in preparation of cards, these books were sent to the schools with only shelf list cards marked to show that catalog cards would be sent later. The shelf list cards provided sufficient information so that books could be processed for shelving and student use. This device, of course, merely transferred the arrearages in the Catalog Department from books to cards. The duplicating machine operator was producing neither the quantity nor the quality of cards needed, and this served to increase arrearages.



Previously the catalog cards of the H. W. Wilson Company had been used in preference to typing our own cards; the annotations were particularly appreciated. The cards were used without over-printed classifications and headings because, although subjects might lend themselves to change, the problems of classification changes would be impractical to adjust in schools where the librarian had no professional help. With regret this service had to be stopped when the packaging became unwieldy and cumbersome for our procedures as the number of collections grew.

Arrearages had been attacked at another point for several years. In order to reduce the number of analytic cards prepared, inquiries were sent to the schools in a form which the librarians could check and return to the Catalog Department and which could be returned to the school with the analytic cards. These forms could then be used as a tracing record for the cards in the specific catalog. Whether or not it saved work for the school librarian, it did not prevent arrearages.

A partial moratorium on sending reference cards to the schools was another attempt to find sufficient time to reduce arrearages. Subject references were discontinued except in the case of new subjects. The searching and recording involved in knowing which school needed references was too time consuming. (Remember that collections in the schools are not uniform.) References were continued for personal names. It was hoped that the school needing the reference already had it or would order a title needing it when the moratorium was lifted. "Requests" for catalog cards for books received at the schools from sources other than the Library Section were discouraged and were given bottom priority. Schools were encouraged to classify these books in accord with books already in the school library. They were directed to prepare their own temporary catalog records for such titles.

Preparation of catalogs and shelf lists for basic collections for new schools is very time consuming and delays regular, normal, day to day work. Commercial photographic reproduction of the catalog was not found successful a few years ago and required considerable preparation time. It was a forward step, but the best forward step for new schools was taken when the Department turned to a local commercial service for cataloging and processing for new elementary and secondary schools. Of course, the central Catalog Department does the original cataloging. It provides unit card copy so that the completed cards and books are compatible with those supplied from the central department. Because consultation is easy with this local company, they can be depended upon to recognize edition changes which require further attention. The IBM 870 installation saves considerable preparation time by producing the catalog copy in a form that requires little revision time and one that the company can use as its original document.

Prior to the installation of the IBM 870 System, there were a number of production problems. The production of single sets of cards by manual typing, even on an electric typewriter, was slow and subject to error so that it was necessary to proofread each card. The same conditions were true for manually typed offset masters. The Department was, and still is, using an A.B. Dick 350 Offset Duplicator to reproduce cards which are needed in quantities of six or more. This break-off figure was selected because it is a practical point in relation to book orders rather than for an economic advantage. The offset masters are used only once because of lack of storage space. There is no place to stock extra cards, no basis of judging what titles would be needed in the future, and no assurance that the same edition would be needed again. When another school ordered the same title at a later time, it was necessary to retype the offset masters or the cards and to revise the finished product. All of this required considerable revision as well as typing time.

The IBM 870 DocumentWriting System was originally developed for the addition of individual headings for form letters and used tape and cards to activate two typewriters.

The Department is not attempting anything dramatic—no new or different kind of task—but a quicker, easier, and more economical way of doing repetitive tasks. Relatively speaking, the IBM 870 is a very simple, unsophisticated piece of machinery—a couple of typewriters and a key punch—an electro-magnetic device with very little logical ability. Setting up the program required a great deal of attention to detail, and the more detail that was necessary the more difficult the setting up became. Although when it was finished the result was an unsophisticated machine, it has proved to be a valuable one.

There was disappointment that carbon ribbon attachments have not been possible for the typewriters in the installation, but the anticipated breakage of such ribbons with consequent machine slowdown as well as the conversion cost stopped us at that time. Because carbon ribbons would not be used, it was necessary to experiment with fabric offset ribbons which would be compatible with the offset duplicating equipment and its supplies as well as suitable for direct typing on catalog cards to be handled by students. The representatives of the A.B. Dick Company, whose duplicating equipment the District uses, were not only very cooperative during the experimental period but have continued to insure fresh ribbons at all times. One's eyes cannot tell when the safe period is past and the carbon necessary for duplicating purposes is no longer being deposited on the paper master. Experimentation has shown that during the first eleven hours of typing time of a fresh ribbon (A.B. Dick Offset Nylon Ribbon, Part No. 4-2510, direct image, IBM, 9/16") carbon is deposited on the master in sufficient quantity for good reproduction on the

duplicating machine. Consequently master stock is used for eleven hours and then the ribbons are read onto card stock.

Problems concerning paper stock arose, and decisions had to be made prior to the IBM 870 installation. The tufted edge which is common on continuous stock was not wanted. After searching, a die cut stock of Standard Register which leaves a smooth edge at the top and bottom of the card and is broken only by three notches was found.

Another card stock problem which may be unique is the change in color tone when there is a change in vendor. Natural manila color is used for all of the cards with a color stripe. A blue stripe on the Master Catalog Card and a green one on the School Catalog Record Card are used. Since each title has both of these master cards standing together in the file, it was disconcerting when one vendor not only produced a turquoise (almost green) line in place of the blue but "corrected" the order with another turquoise. Perhaps there was an unrecognized color blindness involved.

Filing took on a new look as the colored edges appeared in the file. The School Catalog Record Card, which has a green line, necessarily uses a shortened author-title combination because it is limited to the length of a single line. This necessitated changing the arrangement of cards in this file. The master file is now arranged by surname and first initial. Emphasis has been added to the reference cards for names by the use of a distinctive colored stock (red) in preference to the use of a name reference for each title of an author with a variant form of name. Added entry authorities are entered on cards with a brown stripe, and temporary records are on solid yellow stock.

The first year with the IBM Document Writing System was exciting and at times frustrating. In October 1961, the librarian who was to supervise the operation was sent to IBM school for an intensive week's orientation course in IBM methods. From then until August 1962, working closely with IBM programmers, she prepared samples and diagrams for programming purposes. By February 1962, when the control unit and three typewriters were delivered, it was thought that the programming was well along. The permanent typewriters were not received until May, and by that time the librarian had made adjustments to several new programs as previous ones were scrapped. Major programming changes continued until August 1962 when production finally began.

It has been said that this installation is unique—essentially one of a kind. The equipment consists of one 836 control unit and three 866 typewriters. The sum of these is one IBM 870 Document Writing System. (No, this is not the New Mathematics!) Only cards are used—no tape—to control the typewriters which have elite (12 to the inch) type so that full advantage can be taken of the usable space on the conventional (7-1/2cm × 12-1/2cm) catalog card. One typewriter is used exclusively for shelf lists for which a special printed form is used.



No detail that was desired was impossible, or even very difficult; but the accumulation of details that varied from previous 870 installations for form letters made many problems—some of them not yet satisfactorily solved. The solution of problems has been a trial and error procedure. When luck was on our side, two problems might be solved at a time. When it was not, one or the other problem had to be resolved. It was the application that was unusual, not the trial and error procedure. The first hurdle was one of semantics as IBM systems engineers learned library terminology and needs, and librarians learned to express those needs in layman's and machine language. Changes in IBM personnel assigned to the project during this period intensified this problem. Since school libraries are learning centers preparing young people to use other libraries, a responsibility was felt to maintain conventional catalog forms while readying ourselves to change those forms in school libraries as forms change in university and public libraries. The conventional card catalog is still the preferable form for District use.

There was a need to produce these conventional catalog cards by typing on either card stock or offset masters for later reproduction on card stock. There were a number of variables. There were to be no fixed fields as in conventional key punching. Line spacing was not constant. Vertical spacing had to be figured for each title to assure proper placement of the typing on the continuous stock. Since our right margin is not a set field but is irregular, an automatic line finder and carriage return was not practical. Special codes were developed to direct the typewriters by means of the punched cards.

An insufficient number of impulses available in the control unit has been a stone wall which has not yet been fully scaled. Impulses are necessary to direct the typewriters to move in unison or individually as well as to activate the keys for individual lower case letters and numbers. Controls to activate impulses were needed for turning on each typewriter or any combination of them and for starting the carriage at the correct indention with either upper or lower case. These controls were coded into set fields (first two columns of the card), but intermediary controls must also be coded to provide for carriage return, tabulation, a single upper case character, or to end a "mode." The need for both upper and lower case decreased the number of impulses available for directing typewriter keys.

Cards have been divided into "modes" for punching purposes. These "modes" (see Fig. 2) are used for materials typed by all or by only one or two typewriters. A "mode" might consist of the author, title through imprint and, generally, collation; or it might consist of tracings or other information.

The high school catalogers prepare the original documents. These master catalog records (see Figs. 1,4) are on IBM cards which are lined to indicate the area of a catalog card that the



LOS ANGELES CITY SCHOOLS - Division of Instructional Services

MASTER CATALOG CARD

817 Downs, Robert Bingham, ed.  
D Bear went over the mountain, tall tales  
of American animals. Macmillan, 1964.  
358p. illus.

1 Animals. Stories 2 Folklore. U.S.  
3 Humor I Title

DO NOT TYPE BEYOND DOTTED LINE

LIBRARY SECTION

Figure 1  
Master Catalog Card as Prepared by Cataloger

LOS ANGELES CITY SCHOOLS - Division of Instructional Services

MASTER CATALOG CARD

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1 Animals. Stories 2 Folklore. U.S.  
3 Humor I Title

DO NOT TYPE BEYOND DOTTED LINE

LIBRARY SECTION

0547 64

1 10 6 10  
2 11 5 1  
3 12 3 1  
1 16 8 16  
2 16 1 16  
1 1  
2 2  
1 1  
2 2  
1 1  
2 2

Figure 2  
Master Catalog Card Including Vertical Spacing Code  
and Punched Set Number

LOS ANGELES CITY SCHOOLS - Division of Instructional Services

SCHOOL CATALOG RECORD CARD

DOWN'S R/BEAR WENT OVER THE MOUNTAIN

0547 64

1 10 6 10  
2 11 5 1  
3 12 3 1  
1 16 8 16  
2 16 1 16  
1 1  
2 2  
1 1  
2 2  
1 1  
2 2

SCHOOLS

AUTHOR & TITLE

EDITION

PUBLISHER

SET NO. YEAR

Figure 3  
School Catalog Record Card Including Set Number and Bubbled Holdings

MASTER CATALOG CARD			
979.4	Dawson: California (2 of 2)		
Anal:	Petroleum. California p.175-181	1	
	Spaniards in California p.75-117	2:16	
	U.S. History. War with Mexico, 1845-1848	3	
	p.129-141	1	B:15
	Water supply. California p.182-194	2:16	2:1
		1:16	B:15
MASTER CATALOG CARD			
979.4	Dawson: California (1 of 2)		
Analytics	California. Description and travel	1:12	
	p.195-202	2	
	California. Gold discoveries p.145-152	3	
	California. Missions p.51-106	1:15	B:15
	Communication. California p.158-166	2:16	2:1
	Explorers p.25-48	1:16	B:16
	Indians of North America. California	2:16	
	p.3-22	1:16	B:15
	Overland journeys to the Pacific	2:15	1:1
	p.118-128	1:15	
		2	
MASTER CATALOG CARD			
979.4	Dawson, Grace (Strickler)		
D	California, the story of our southwest	1:10	6:10
	corner. Macmillan, 1939.	2:11	5:1
	212p. illus., map.	3:12	3:1
		1:12	B:12
		2:16	2:4
		1	
		2	
		1	
		2	
		1	
		2	
		1	
		2	
		1	
		2	

Figure 4  
Master Catalog Card with Analytic Tracing for  
Shelf List Including Vertical Spacing Codes

offset duplicator will reproduce. This permits the key punch operator to recognize instantly when codes must be punched into the cards for typewriter operation. In addition to the original documents, the catalogers prepare any needed "format" cards (see Figs. 5,6). These cards are expendable documents used to display card formats which are not clearly shown on the original documents; e.g., a shortened form for shelf list, an unusual or difficult added entry form or, an extension card.

When the Master Catalog Card reaches the Document Writing System process, it is reviewed, and coded information is recorded





Figure 7  
Punched Set of 870 Document Writing System Cards



A "set" number is assigned in consecutive order to each Master Catalog Card. This number is punched into the Master Catalog Card (see Fig. 2), the School Catalog Record Card (see Fig. 3) which was forwarded with the Master Catalog Card, and each of the punched cards (see Fig. 7). (The alphabetically filed master records serve as an index to the numerically filed punched cards.) The punched cards include also a sequential numbering for cards making up each set (see Fig. 7). Each set is easily distinguished within the file because all cards have upper left corner cuts except the first one which has a right corner cut.

Two permanently wired boards are used, one for punching and one for reading. The reading operation, of course, fascinates visitors as the punched cards are fed into the Document Writing System, and the coded information is interpreted to produce the typed cards. During the reading process, an operator reads from the Master Catalog Card as the copy is being typed. (It has been found practical to read on Thursdays.) When the day's reading has been completed and the ink has dried, the stock is fed into the burster, a Standard Register Selec-tronic Tab Card Burster. After the stock has been burst (from each typewriter separately), the cards are assembled into sets for each title and forwarded with the Master Catalog Card and the School Catalog Record Card. A library clerk compares the catalog cards and the book, notes on the School Catalog Record Card that cards have been sent to the school, and then the book is shipped to the school. The School Catalog Record Card is returned to the master file where the filing revisor matches the set number of the Master Catalog Card and School Catalog Record Card to assure accurate filing.

The District is fortunate to have a cataloger who had had key punch training before joining the staff. This cataloger recognized what the IBM programmers confirmed—that efficiency lies in giving one of the library clerks key punch training rather than in attempting to provide library background to a key punch operator. Civil service personnel advance from the beginning positions all too rapidly, and the Personnel Commission is understandably reluctant to establish "one-of-a-kind" positions. The operators must understand the constitution of a set of cards so that the school librarian—and there is only one in a school—need give only a minimal amount of time to helping the school clerk who is not always full time in the library and who is vulnerable for advancement or assignment changes.

Service calls for machine malfunction have been minor irritations rather than problems. It was anticipated that the machines would be inactive 10 per cent of the time—some months that has been true, other months not. The present over-all period of non-productivity is less than 10 per cent, but the Cataloging Department



is conveniently located only a few blocks from the service department of IBM.

The greatest disadvantage of the IBM 870 Document Writing System is the insufficient number of impulses to direct the typewriters to produce all the characters that the standard office typewriter does. The coding that is necessary to produce the appropriate results on the print-out of catalog cards would be difficult for the average key punch operator, but key punch operators are not hired for this installation. Functional limitations of the equipment are frustrating. Because of the demands upon the equipment, increased capacity is needed.

The insufficient number of impulses available in the control unit is an educational handicap. Unless they appear on dead keys, diacritical marks, which are a part of the spelling of many words in foreign languages, cannot be used. Since the cards are produced for teaching-learning situations as well as for finding purposes, this is a serious drawback, especially since there is an increase in the study of foreign languages in the schools. It should be mechanically possible to use manual wiring with a distinctive color directive card, and it can be presumed that the same procedure could be followed here that is used for square brackets if all available impulses were not already in use. Square brackets are used somewhat sparingly because the only means of producing them is to manually change the wiring on the reading board. A signal is given to the operator by a punched card of distinctive color when this change is necessary.

A major disadvantage is that the machine is an independent unit which can take advantage of the information punched into order cards for only a few central office records. Order records are abbreviated and coded so that they are not directly transferable for punching catalog cards. The by-products of the punched order cards which have been applicable to the IBM 870 include the punching of the School Catalog Record Card for titles new to the Master Order file. When the entry needed for ordering is not the same as that needed for cataloging purposes, incompatibility results, and there is no useful by-product. Additional by-products of order records provide some expendable working records for Catalog Department use.

The ability of the System both to input and output has delaying tactics in that it cannot do both at the same time. Currently 50 per cent of its time is now used for output. As output increases so does input. The obvious answer is longer hours or another "inputter," but floor space is limited, and even such a small machine taxes it too heavily. Until, or unless, space for additional equipment is available, it appears advisable to use machine typing in conjunction with manually typed cards for analytics. It would be preferable to have the document writer do the complete typing for the sets since that would save revision as well as typing time, even though all

cards, including those machine typed, get a least a once over lightly check.

Some related problems involve the continuous stock as it feeds through the typewriters. Any irregularity in stock causes wastage. If stock is not carefully joined at the junction point, there will be wastage—not only of the defective stock but of all cards read for that title. If the stock is too stiff, it may not hold against the platen and may be printed in incorrect alignment. The chip between cards, if not precisely cut, may break and catch so that vertical movement is hampered.

The single line information on the School Catalog Record Card has necessitated new filing directives. Because of line length we are limited to a single initial of an author's given name. This results in interfiling the titles of several authors in the Master Catalog file. In order to keep corporate entries within bounds, abbreviations have been used, but even so the title is very limited. The Cataloging Department depends upon the set number for accuracy in filing.

The greatest advantage of the IBM 870 Document Writing System is that it is now possible for the Department to provide better service to libraries on a more current basis. There is no longer a backlog of work for high schools. No longer is there an accumulation of records for cards to be sent later after the books and shelf lists have been received in the schools. The book can now be sent with complete sets of cards, including the extensive analytics needed for collected biographies and some literary works. Cards can be sent for all editions instead of for only a single edition of a title so that the catalogs represent current holdings. The reduction in revision time is another major advantage, relieving the staff of considerable tedious work. The advantage of individualized collections in the schools results in some sporadic orders for specific titles. These repetitive titles presented problems of retyping and revision in the past which have been reduced by the System, but the "reading" of these "re-runs" requires more and more time. The System has also negated the need for space consuming storage of "extra" cards in the hope of avoiding the retyping of offset masters or individual sets of cards.

It is no longer necessary to remove the Master Catalog record for a previously cataloged title from the file to produce a set of catalog cards. The School Catalog Record Card is removed without substituting a temporary record. (Since every title has both a Master Catalog Card and a School Catalog Record Card, if the School Catalog Record Card is not in file it is in process and not immediately available.) A green card 1/4" higher than the data processing card is prepared, giving set number, first word of entry, and number of sets needed to be used as a temporary record in the numerical file of punched cards.

It is difficult to discuss costs, for cost studies so often do not agree in the factors involved. Los Angeles costs may have little relation to those in another school system. The figures that have been used are not definitive. Some are carefully evaluated estimates, and they are not comparable to figures for other installations. Overhead costs have not been included. These figures do, however, show comparative costs for 1960-61 and 1963-64 for items included for the Library Catalog Department of the Los Angeles City Schools.

Major cost factors for the years under discussion were as follows:

	<u>1960-61</u>	<u>1963-64</u>
Professional salaries	\$19,692.00	\$45,852.00 (incl. \$9,864 for IBM 870)
Clerical salaries	21,846.00	39,468.00 (incl. 10,530 for IBM 870)
Card stock	1,400.00	5,400.00
Offset stock	300.00	300.00
Catalog Master record stock	25.00	11.00
Machine rental		3,660.00
Typewriters	350.00	350.00
Burster (prorated 5 years)		485.00
Offset Duplicator (5 years)	280.00	150.00 [repairs]
Filing cases	300.00	900.00
Total	<u>\$44,193.00</u>	<u>\$96,576.00</u>
Book budget (incl. "dup")	\$412,069.00	\$604,125.00
Sets of cards prepared	45,553	98,157

On the basis of these figures, the over-all cost of producing a set of catalog cards, including cataloging and classification costs for new titles, was \$0.97 in 1960-61 and \$0.983 in 1963-64. These figures are, of course, in no way indicative of actual cataloging costs which are several times that per title. No allowance has been made for staff time spent on the ever present "related duties as assigned" that raise costs beyond those of direct production. General salary increases for the continuing 1960-61 staff positions alone account for \$0.0913 of the \$0.983 cost of a set of cards in 1963-64. A saving should be evident in 1964-65 because the parallel files, essential



during the change-over period, are no longer necessary, meaning that the work routines have been shortened. But the important factor, so long as costs remain within reasonable limits, is that more work can be accomplished, backlogs cleared, and more service to the schools given rather than that a unit cost saving can be effected with the System.

There is a need to advance thoughtfully in schools; for school librarians have the responsibility of providing catalog services in a format which students will meet in public, university, and special libraries as well as in their school libraries. Neither must school libraries lag behind the developments being made in other libraries. It is quite possible that as these developments occur school libraries may change mightily. Computerized methods may better serve the library needs of the future. At present books are being moved with appropriate catalog records more rapidly than in the past. This is a service of the greatest importance to students. The Catalog Department has been more concerned about accomplishing a job than it has been about costs, although the costs are very important. With the IBM 870 System the Department has accomplished more without increasing the total staff although there have been changes in job responsibilities and internal department assignment which are not shown in the positions chart above.

The IBM 870 Document Writing System is serving the Library Section of the Los Angeles City Schools well at this time.

### Appendix

#### PUNCH ROUTINE CHART

When the cataloging has been completed, the general procedure is as follows:

1. Master Catalog Card (MCC) which becomes the "original document" for punching is prepared by the Cataloger (Library Coordinator).

Information is typed in appropriate format within the dotted lines which defines the area from which our offset duplicator will reproduce.

2. Need for format cards is determined.

By-pass Step 3 if format cards are not needed.

3. Additional format cards, when needed, are prepared by the Cataloger:

Shortened shelf list cards  
 Extension cards  
 Tracing cards  
 Heading cards

Long headings of more than one line  
 Unusual arrangements, e.g., author-title analytical cards.

4. Master Catalog Card (MCC) and/or format cards are assembled with School Catalog Record Card (SCRC) and forwarded for IBM 870 processing.

SCRC is a holdings record on which schools having the title are noted.

5. Vertical spacing is figured and coded into the appropriate spaces on the MCC and format cards.

6. Next consecutive "set number" is punched into delineated area at upper right of MCC and SCRC.

7. Cards are punched with appropriate coding to assure the correct catalog form on card stock in the reading process.

Same set number is punched into each Document Writing System (DWS) card punched for that title.

Each DWS card is additionally numbered from first to last for the set. Card 1, which has the upper right corner cut, records the total number of cards in the set. All other DWS cards in the set have the upper left corner cut.

8. Punched cards are sight revised.

Format cards are destroyed.

9. Number of sets per title required is entered on the DWS card, and cards are ready for reading routine.





## READ ROUTINE CHART

When an appropriate number of cards (newly punched or withdrawn from prepunched file) is ready for reading:

1. Punched Document Writing System cards are sorted, grouped, and stacked in the hopper according to the number of sets needed for each title.
2. Decision is made of stock to be used—card stock for five or fewer copies of a title; offset master stock for six or more copies.

Continuous stock is fed into typewriters.

3. Document Writing System cards are read by the System.

DWS cards are returned to file.

4. Stock which has been read is burst.

Card stock by-passes step 5.

5. Cards are reproduced from offset masters.

Offset masters are destroyed.

6. Cards are gathered into sets and assembled with books.

